ROOTLAB

USER MANUAL

COMMERCIAL USE

Vertical Autoclave

200 Litres



Automatic pressure steam steriliser. Everything you need to set up, run and look after your autoclave.

Rootlab SKU HVS200D

Please read this manual before you first use the unit.

rootlab.com.au

WELCOME

Thanks for choosing Rootlab

Your new vertical autoclave uses saturated steam to sterilise lab glassware, culture media, solutions, instruments and cultivation substrates. This manual walks you through safe setup, everyday operation and the care that keeps it running for years.

If anything is unclear, or you need spare parts or repair help, get in touch with the Rootlab team. Our details are on the back page.

INSIDE THIS MANUAL

1. Safety first
2. Symbols and labels
3. About your autoclave
4. Specifications
5. Parts of the unit
6. Installation
7. The control panel
8. Setting parameters
9. Running a cycle
10. Faults and protection
11. Care and maintenance
12. In the box and warranty

1 Safety first

An autoclave is a pressure vessel that runs hot. Read and understand every warning in this manual before you start, and check the unit is in good working order before each use.

Before you start

1. Use the autoclave only for the purposes, methods and precautions described in this manual. Anything else can damage the unit or cause sterilisation to fail.
2. Operators must be trained, understand how the unit works and have a working knowledge of the sterilisation process.
3. Repairs and maintenance must be carried out by a suitably qualified person.
4. This equipment is classed as a pressure vessel. Follow your state's work health and safety rules for pressure equipment and name a responsible person for its safe and correct use.
5. Keep watching the unit while it runs. Its safety features do not replace an

attentive operator.

Electrical safety

1. The supply circuit must meet Australian electrical safety requirements. The unit will not work properly if the voltage fluctuates by more than 10%.
2. The unit must be reliably earthed. Never modify or remove the earth wiring inside or outside the unit.
3. Always disconnect power before replacing a fuse or doing any electrical work. Replacement fuses must match the rating specified in this manual.
4. Check the circuit switch position before operating. If anything goes wrong, switch off the main power immediately.
5. Keep the unit away from strong radio frequency sources (for example unshielded RF equipment), which can affect normal operation.

Heat, steam and pressure

1. Stay clear of surfaces marked as hot and of the steam exhaust port to avoid burns.
2. Test the safety valve regularly as required by regulation.
3. Inspect the lid gasket regularly. Replace it as soon as it shows damage, deformation or hardening.
4. Use equipment and accessories only within their service life, and replace worn or broken parts before use.
5. Never sterilise oils, fats, or items that cannot tolerate high temperature, high pressure or moisture.

Checking that it works

1. Use a sterilisation indicator card with every load to confirm the cycle was effective.
2. Check sterilisation performance at least once a week. Biological indicators are the best way to do this.
3. Use distilled or purified water only.
4. At the end of its life, dispose of the unit and its accessories according to your local environmental rules.

2 Symbols and labels

These symbols may appear on the unit, its carton or in this manual.

Symbol	Meaning
Fragile	The package contains fragile items. Handle with care.
This way up	Keep the package upright during transport.
Keep dry	Keep the package dry.
Temperature limits	Keep the package within the marked temperature range during transport.
~	Alternating current
Earth symbol	Protective earth terminal
O	Main power off
I	Main power on
Lightning triangle	Caution, electric shock hazard
Hot surface triangle	Caution, risk of scalds
Exclamation triangle	Caution, danger. See the accompanying documents.
PT/TT	Pressure / temperature test point
▲	Up button, increases a value
▼	Down button, decreases a value

3 About your autoclave

The autoclave is made up of the outer shell, the sterilising drum, immersed electric heating tubes, the control system and the power supply. The single layer chamber makes its own steam, vents air out through the lower side of the unit, seals with a central locking lid protected by a micro switch and mechanical interlock, and runs the whole cycle digitally.

What it is for

Steam sterilisation of instruments, dressings, glassware, solutions and

culture media.

What it is not for

Anything that cannot handle high temperature, high pressure or moisture, and oil or fat based products.

Normal working conditions

Condition	Range
Ambient temperature	+5 to +40°C
Relative humidity	85% RH or less
Atmospheric pressure	70 to 106 kPa
Power supply	AC 220 V ±10%, 50 Hz ±1 Hz

Local atmospheric pressure affects the boiling point of water, so take it into account when you set cycle parameters. Water used in the chamber should be distilled or purified.

4 Specifications

Item	200 L autoclave
Product	Vertical Autoclave 200 Litres (Automatic)
Rootlab SKU	HVS200D
Capacity	200 L
Chamber size	Ø600 × 760 mm (about 40% more usable space than the 150 L)
Construction	304 stainless steel
Working pressure	0.22 MPa (about 32 psi)
Maximum working pressure	0.23 MPa (about 33 psi)
Maximum temperature	134°C
Temperature setting range	50 to 134°C

Temperature accuracy	±1°C
Timer	Up to 9999 minutes
Heating power	8 kW
Power supply	Single phase 220 V, 50 Hz (suits the standard Australian 230 V supply)
Electrical circuit	Dedicated 40 A single phase circuit
Water fill	about 20 L
Overall size (L × W × H)	660 × 640 × 1330 mm
Packed size	810 × 810 × 1500 mm
Weight	174 kg net (205 kg packed)
Sterilising baskets	3 (stainless steel)
Warranty	12 month limited parts warranty

Key features

- Fill with water, set the timer and the autoclave does the rest.
- Pressure and temperature controller with a setting range of 0.07 to 0.22 MPa (115 to 134°C saturated steam).
- Digital display of working status with touch keys. Settings are remembered after power off.
- Automatic cold air purge during sterilisation, and automatic steam discharge after the cycle.
- Safety valve and pressure gauge. The valve releases pressure automatically if it exceeds the maximum allowed.
- Immersed heating tubes with overheat protection. If the water drops below the marked level, heating cuts out and an alarm sounds.
- A long beep signals the end of the cycle, then the unit shuts off.
- If the temperature or pressure drops below the set level during a cycle, the countdown pauses and resumes once it recovers.
- Built for daily commercial use: 3 to 5 cycles a day.
- Drain tap and heavy duty wheels.

5 Parts of the unit

Clockwise from top left: lid with central locking handle, safety valve, sterilising basket, exhaust and drainage knob.



Also on the unit: the dual scale pressure gauge above the control panel, the power switch on the side of the cabinet, and heavy duty wheels.

6 Installation

Where to put it

1. Place the unit on a flat, level surface.
2. Leave clearance around it: at least 30 cm on the left, 20 cm at the back and 80 cm on the right.
3. Do not put the safety valve steam vent near a power outlet, and never block the vent.
4. Choose a spot where the power can be reached and disconnected easily.

Power connection

1. Supply: single phase 220 V, 50 Hz. The standard Australian 230 V supply is suitable.
2. The autoclave must be installed by a licensed electrician. It needs a dedicated 40 A single phase circuit. The unit draws about 35 A at 230 V, so the 32 A setup used for the 150 L is not enough. The plug and wall outlet are not included.
3. Your electrician should confirm the circuit and connection type before installation.
4. At 174 kg, move the unit carefully on its wheels and get help when lifting or tilting it.
5. Fit a suitable switch or circuit breaker with overcurrent protection on the supply, close to the unit.
6. The unit must be reliably earthed. If the outlet has no earth, a separate earth conductor must be connected before power is applied.

A garage or shed is fine, as long as the clearances above are kept and the space is dry and well ventilated.

WARNING

Never operate the autoclave without a reliable earth connection, and never position it where the power cannot be quickly disconnected.

Before each use

1. Check the power supply matches the requirements above.
2. Arrange items on the sieve plate with gaps between packs. Packs of about 20 × 20 × 10 cm work best. Do not pack dressings or textiles tightly.
3. Have a sterilisation indicator ready (chemical indicator card or biological indicator).

7 The control panel



PV display: the measured chamber temperature (°C).

SV display: the set temperature or time (°C / min), and END when a cycle finishes.

Quick temperature buttons: 121°C, 126°C and 134°C.

Set steps through the parameters. **Add** and **Subtract** change the value shown. **Start** puts the unit into standby, and a second press starts heating.

Status light	Meaning
Power status: Ready / Heat up	Unit is ready, or is heating
Working state: Sterilise / End	Sterilising phase is running, or the cycle has finished
Water level: Standard / Dry	Water is at the correct level, or the chamber is low on water
State of fault	A fault has been detected. Stop and check the unit before continuing.

Other controls

Power switch: on the side of the cabinet.

Exhaust and drainage knob: on the lower front of the unit, used to release steam and drain the chamber.

Lid interlock: a micro switch and mechanical interlock stop the unit running unless the lid is correctly closed.

8 Setting parameters

Switch on the power, then press Set to step through the parameters and use Add and Subtract to change each value.

Code	Parameter	Notes
P1	Preheating temperature	
P2	Sterilising temperature	121°C or 123°C suits most mycology loads
P3	Sterilising time	Up to 9999 minutes
P6	Cycle counter	Records how many cycles the unit has run

Leave any other P codes at their factory settings unless Rootlab advises otherwise.

9 Running a cycle

1. Prepare

1. Open the lid and lift out the wire basket and the inner container.
2. Add about 20 L of distilled or demineralised water. The level must be above the float switch but below the three legged stand.
3. Refit the inner container and load your items into the chamber, with gaps between packs so steam can circulate. Add a sterilisation indicator.
4. Line the notch up with the micro switch and close the lid.
5. Switch on the power and set P1, P2 and P3 (see section 8).

2. Start

Press Start once to put the unit into standby, then press Start again to begin heating.

3. Sterilise

When the chamber reaches the sterilising temperature, the unit enters the sterilising phase and the countdown begins. If the temperature or pressure drops below the set level, the countdown pauses until it recovers.

4. Finish

1. When the cycle is complete, the display shows END.
2. Wait until the pressure gauge reads zero.
3. Pull the safety valve ring upwards to release any remaining steam. Do not open the lid while steam is still present.
4. Switch off the power, then open the lid while standing behind the unit, away from any escaping steam.
5. Lift out your items. They will still be very hot.

LIQUIDS AND GLASSWARE

Let liquids cool and depressurise slowly. Releasing steam quickly makes liquids boil over and can shatter glass.

For mushroom growers

These are Rootlab's starting points for mycology work. Every load is different, so always confirm results with indicators.

Setting	Recommendation
Temperature	121°C or 123°C (about 15 psi)
Liquid culture	about 20 minutes
Grain and substrate (full load)	about 90 minutes

Approximate load per cycle

Load	Quantity
Liquid culture jars	40 or more
1 L reagent bottles	40
3 kg substrate bags	20
2 kg substrate bags	25
1 kg spawn bags	55

10 Faults and protection

If a State of fault light comes on, or the Water level Dry light shows, stop the cycle, switch off and check the unit before running it again. Contact Rootlab if the fault does not clear.

Low water overheat protection

If the chamber runs low on water the heating tubes would overheat, so the unit cuts its power automatically. Switch off the power. Do not open the lid until the chamber pressure is back to zero. Then add water, close the lid, tighten every bolt firmly and switch the breaker back on. Once the Water level Standard light shows, you can run the cycle again.

Overvoltage protection

If the supply voltage goes above AC 280 V, the unit cuts the heating power. Switch off and check the supply is normal (AC 220 V) before restarting.

The unit will also stop a cycle and show a prompt for problems such as an overly long heat up, overtemperature in the chamber or low water. Fix the cause shown and make sure the unit is safe before continuing.

11 Care and maintenance

Follow your state's work health and safety rules for the inspection and use of pressure equipment.

1. Read this manual before use, and always operate the unit by the steps it sets out.
2. Keep the water above the float switch and below the three legged stand.
3. Use demineralised water to extend the life of the heating elements and cut mineral build up. Top up every cycle or two and replace it every 5 to 10 cycles. If you use tap water, replace it every two cycles.
4. Always make sure cold air is fully exhausted before heating, or sterilisation may be affected.
5. Do not mix load types in one cycle, for example textiles with solutions, or

rubber with instruments.

6. For solutions, use heat resistant glass bottles filled to between half and three quarters. Plug the neck with gauze, never a solid rubber or cork stopper, and stand bottles in a protective container inside the chamber.
7. Drain the water at the end of every day of use. Dry the unit and wipe off water marks regularly.
8. Heavy scale: soak the chamber for 10 to 12 hours in a mix of 0.75 kg caustic soda and 0.25 kg kerosene in 10 L of clean water, then rinsing thoroughly with clean water. Wear gloves and eye protection.
9. Verify temperature, time and results regularly with a thermometer, indicators or biological tests.
10. Have the safety valve and pressure gauge inspected and calibrated every year by a qualified technician. Use a suitable spanner so the connections seal properly when refitted.
11. Avoid knocks while the unit is under pressure and never exceed the rated pressure. If the gauge shows more than the maximum and the safety valve does not release, stop using the unit and replace the valve before further use.
12. Check the lid gasket often and replace it if it deforms, hardens or ages.
13. Replacement fuses must be the same type and rating as the original.
14. Keep the unit and its power outlet properly earthed.
15. Keep the unit clean.
16. For storage, choose a shaded, dry, well ventilated place and protect the unit from dust.

12 In the box, warranty and service life

Item	Qty	Notes
Autoclave	1	On heavy duty wheels
Sterilising baskets	3	Stainless steel
Chamber handle	1	
Inner lid	1	
Exhaust tube	1	With one hose clamp
User manual	1	

The plug and wall outlet are not included.

Warranty: 12 month limited parts warranty. Parts that fail from a manufacturing defect within 12 months are replaced free of charge. Normal wear and tear, misuse and accidental damage are not covered.

Service life: with normal use and maintenance, the recommended service life is 7 years.

Date of manufacture: see the nameplate on the unit.

QUICK START

Your cycle in five steps

1. Fill with about 20 L of distilled or demineralised water, above the float switch and below the three legged stand.
2. Load the chamber, line up the notch with the micro switch and close the lid.
3. Switch on, press Set and use Add and Subtract to set P2 temperature and P3 time.
4. Press Start for standby, then Start again to heat. The countdown begins at temperature.
5. At END, wait for the gauge to read 0, pull the safety valve ring, switch off and open the lid from behind the unit.

Need a hand?

For spare parts, servicing or questions about your autoclave, the Rootlab team is here to help.

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